

WE CLAIM:

1. A data switching node evaluating Protocol Data Unit (PDU) switching performance comprising:
 - a. a PDU classifier extracting header information from PDUs received via a plurality of ports associated with the data switching node;
 - b. a receive trace record having entries, each receive trace record entry specifying timed information regarding a corresponding received PDU;
 - c. a switching function processing PDUs;
 - d. a transmit trace record having entries, each transmit trace record entry specifying timed information regarding a corresponding processed PDU; and
 - e. a processor using the information stored in trace record entries to evaluate the performance of the switching function.
2. A switching data node as claimed in claim 1, wherein the switching data node further comprises a timer.
3. A switching data node as claimed in claim 1, wherein each one of the trace records comprises a circular buffer storing the trace record entries.
4. A switching data node as claimed in claim 3, wherein each one of the circular buffers includes an index pointer specifying a next trace record entry to be populated.
5. A switching data node as claimed in claim 1, wherein the number of trace record entries associated with each one of the trace records is prespecified corresponding to a designed PDU processing throughput of the data switching node.

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6. A switching data node as claimed in claim 1, wherein the number of trace record entries associated with each one of the trace records is variable, the number of record entries being adjustable via a one of a manual setting, management console, and a higher level protocol optimizing resources available for a current PDU processing throughput of the data switching node.
7. A switching data node as claimed in claim 1, wherein each receive trace record entry further comprises specifiers holding:
 - a. a time value indicative of the time at which the corresponding PDU was deemed to have been received; and
 - b. identifying information corresponding to the received PDU.
8. A switching data node as claimed in claim 7, wherein the identifying information corresponding to the received PDU further comprises a specification of a location at which the PDU is stored pending processing.
9. A switching data node as claimed in claim 7, wherein the identifying information corresponding to the received PDU further comprises a specification of a port via which the PDU was received.
10. A switching data node as claimed in claim 7, wherein the identifying information corresponding to the received PDU further comprises a specification of a destination context corresponding to the received PDU.
11. A switching data node as claimed in claim 1, wherein each transmit trace record entry further comprises specifiers holding:
 - a. a time value indicative of the time at which the corresponding PDU was deemed to have been processed; and
 - b. identifying information corresponding to the processed PDU.

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12. A switching data node as claimed in claim 11, wherein the identifying information corresponding to the processed PDU further comprises a specification of a location at which the PDU was stored pending processing.
13. A switching data node as claimed in claim 11, wherein the identifying information corresponding to the processed PDU further comprises a specification of a port via which the PDU was received.
14. A switching data node as claimed in claim 11, wherein the identifying information corresponding to the processed PDU further comprises a specification of a destination context corresponding to the processed PDU.
15. A switching data node as claimed in claim 14, wherein specification of the destination context corresponding to the processed PDU includes a port via which the PDU is to be forwarded towards an intended destination.
16. A switching data node as claimed in claim 14, wherein specification of the destination context corresponding to the processed PDU includes a specification that the PDU is to be dropped.
17. A method of evaluating a processing performance of a data switching node forwarding Protocol Data Units (PDUs) comprising steps of:
 - a. extracting PDU header information from a received PDU;
 - b. populating an entry in a receive trace record held by the data switching node;
 - c. processing the received PDU;
 - d. populating an entry in a transmit trace record held by the data switching node; and
 - e. evaluating the processing performance based on information held in trace record entries.

18. A method as claimed in claim 17, wherein populating a one of the trace record entries with information the method further comprises a step of populating a PDU pointer entry with a value indicative of a location at which the corresponding PDU is temporarily stored.
19. A method as claimed in claim 17, wherein populating a one of the transmit trace record entries with information the method further comprises a step of populating the transmit trace record entry with information indicative of a PDU discard in the case of a PDU drop instance.
20. A method as claimed in claim 19, wherein evaluating the performance of the data switching node the method further comprises a step of calculating a PDU drop indication corresponding to each stream of data conveyed by the data switching node.
21. A method as claimed in claim 19, wherein evaluating the performance of the data switching node the method further comprises a step of calculating a PDU drop indication corresponding to a current operational state of the data switching node.
22. A method as claimed in claim 17, wherein populating a one of the receive trace record entries with information the method further comprises a step of populating a time stamp specifier associated with the receive trace entry with a time value indicative of the time at which the PDU was deemed to be received.
23. A method as claimed in claim 18, wherein populating a one of the transmit trace record entries with information the method further comprises a step of populating a time stamp specifier associated with the transmit trace entry with a time value indicative of the time at which the PDU was processed.

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24. A method as claimed in claim 22, wherein evaluating the processing performance the method further comprises a step of determining a PDU processing delay by calculating the difference between time stamp values held in a receive trace record entry and a transmit trace record entry corresponding to the PDU.
 25. A method as claimed in claim 23, wherein evaluating the processing performance the method further comprises a step of determining an average PDU processing delay incurred at the data switching node by calculating a average of the PDU processing delays incurred by corresponding PDUs.
 26. A method as claimed in claim 23, wherein evaluating the processing performance the method further comprises a step of determining a PDU conveyance jitter for a stream of data by determining the distribution of PDU processing delays incurred by a plurality of PDUs associated with a stream of data.
 27. A method as claimed in claim 23, wherein evaluating the processing performance the method further comprises a step of determining a PDU conveyance jitter for the data switching node by determining the distribution of PDU processing delays incurred by a plurality of PDUs forwarded by the data switching node.